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NATIONAL RECOVERY ADMINISTRATION

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RESEARCH AND PLANNING DIVISION

EVIDENCE STUDY

NO. I

THE AUTOMOBILE MANUFACTURING INDUSTRY

Prepared by

FRANK EVANS, Jr.

September, 1935

PRELIMINARY DRAFT

(NOT FOR RELEASE: FOR USE IN DIVISION ONLY)



THE EVIDENCE STUDY SPRIES

The EVIDENCE STUDIES were originally planned as a means of gathering evidence bearing upon various legal issues which arose under the National Industrial Recovery Act.

These studies have value quite aside from the use for which they were originally intended. Accordingly, they are now made available for confidential use within the Division of Review, and for inclusion in Code Histories.

The full list of the Evidence Studies is as follows:

- 1. Automobile Manufacturing Ind. 23. Mason Contractors Industry
- 2. Boot and Shoe Mfg. Ind. 3. Bottled Soft Drink Ind.
- 4. Builders! Supplies Ind.
- 5. Chemical Mrg. Ind.
- 6. Cigar Mfg. Industry
- 7. Construction Industry
- 8. Cotton Garment Industry
- 9. Dress Mfg. Ind.
- 10. Electrical Contracting Ind.

 32. Retail Lumber Industry
- 11. Electrical Mfg. Ind.
- 12. Fab. Metal Prod. Mfg., etc. 34. Retail Trade Industry 13. Fishery Industry 35. Rubber Mfg. Ind.
- 14. Furniture Mfg. Ind.
- 15. General Contractors Ind.
- 16. Graphic Arts Ind.
- 17. Gray Fron Foundry Ind.
- 18. Hosiery Ind.
- 19. Infant's & Children's Wear Ind. 41. Waste Materials Ind.
- 20. Iron and Steel Ind.
- 21. Leather
- 22. Lumber & Timber Prod. Ind.

- 24. Men's Clothing Industry 25. Motion Picture Industry
- 26. Motor Bus Mfg. Industry (Dropped)
 27. Needlework Ind. of Puerto Rico
- 28. Painting & Paperhanging & Decorating 29. Photo Engraving Industry
- 30. Plumbing Contracting Industry 31. Retail Food (See No. 42)
- 33. Retail Solid Fuel (Dropped)

- 36. Rubber Tire Mfg. Ind.
- 37. Silk Textile Ind.
- 38. Structural Clay Products Ind.
- 39. Throwing Industry
- 40. Trucking Industry
- 42. Wholesale & Retail Food Ind. (See No.
- 43. Wholesale Fresh Fruit & Veg. 31)

In addition to the studies brought to completion, certain materials have been assembled for other industries. These MATERIALS are included in the series and are also made available for confidential use within the Division of Review and for inclusion in Code Histories, as follows:

- 44. Wool Textile Industry
- 46. Baking Industry
- 47. Canning Industry
- 48. Coat and Suit Ind.

- 49. Household Goods & Storage, etc. (Drop-
- 45. Automotive Parts & Equip. Ind. 50, Motor Vehicle Retailing Trade Ind. ped)
 - 51. Retail Tire & Battery Trade Ind.
 - 52. Ship & Boat Bldg. & Repairing Ind.
 - 53. Wholesaling or Distributing Trade

L. C. Marshall Director, Division of Review

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AUTOMOBILE MANUFACTURING INDUSTRY

Foreword

The data appearing in this report come, in the main, from the following sources: the National Automobile Chamber of Commerce; the Code Authority (Automobile Manufacturers' Association); the Bureau of the Census; the trade journals, <u>Automotive Industries</u> and <u>Automobile Topics</u>; <u>The Automobile Industry</u>, by Ralph C. Epstein; and the Research and Planning Division, NRA. The National Automobile Chamber of Commerce is a trade association which publishes statistics in an annual booklet, <u>Automobile Facts and Figures</u>. The National Automobile Chamber of Commerce changed its name in 1935 to the Automobile Manufacturers Association, and this association constituted the Code Authority for the Industry.

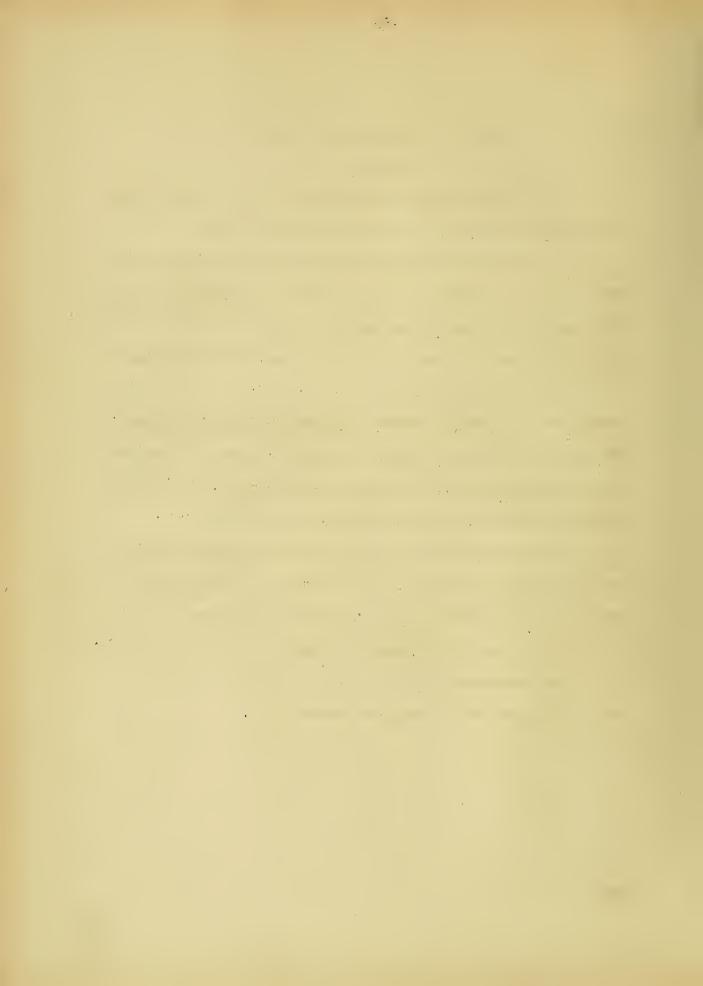
No information has been assembled for the section on Trade

Practices which forms Part V in the "Outline for Collection of

Evidence." Fragmentary material which falls under Part VI of

the Outline is therefore presented as Chapter V in this report.

The differences between the Code and Census definitions of this Industry are explained in Chapter I.



Chapter I

THE NATURE OF THE INDUSTRY

Definitions of the Industry

The Code defines the Automobile Industry as follows:

"The term 'Industry' as used herein includes the manufacturing and assembling within the United States of motor vehicles and bodies therefor, and component and repair parts and accessories by manufacturers or assemblers of motor vehicles.

"The term 'motor vehicles' as used herein means automobiles, including passenger cars, trucks, truck tractors, busses, taxi-cabs, hearses, ambulances, and other commercial vehicles for use on the highway, excluding motorcycles, fire apparatus, and tractors other than truck tractors."

The Census of Manufactures for 1931 gives the following definition for the "Motor Vehicle" Industry:

"The classification 'Motor Vehicles' applies to all manufacturing establishments whose principal products are 4-wheeled or 6-wheeled motor-propelled (internal-combustion or electric) steerable vehicles, except industrial trucks. Establishments engaged primarily in the manufacture of motor-propelled fire apparatus, street sweepers, road oilers, etc., are also classified in this industry." (Manufacturers of motorcycles are classified in the Motorcycles, Bicycles and Parts Industry.)

In addition, the Census of Manufactures has a separate industry classification "Motor-Vehicle Bodies and Motor-Vehicle Parts," which includes establishments engaged in the manufacture of bodies and parts either for sale as such or for transfer to motor-vehicle manufacturing establishments. Thus, if an automobile-manufacturing company manufactured its parts and bodies in one plant and assembled these bodies and parts into automobiles in another plant, the Census would include the first plant and its employees, payrolls, etc., in the Motor-Vehicle Bodies and Parts Industry, and the second plant in the Motor Vehicle Industry.

It can thus be seen that the Census classification "Motor Vehicles" and the Code classification are not coextensive. The Census data on "Motor Vehicles" do not include separate plants engaged in the manufacture of bodies and parts even though they are owned and operated by automobile manufacturers. Consequently, Census figures on number of plants, wage earners, and wages understate the size of the Automobile Manufacturing Industry as defined by the Code. On the other hand, the Census material includes information on fire apparatus, street sweepers, road oilers, etc., but the total volume of production in these categories is incidental. Except for the inclusion of these comparatively minor groups, however, Census data on value and volume of production can probably be considered as applicable to the Industry as defined by the Code, since the value of all bodies and parts

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would be included in the value of the finished motor vehicles, regardless of whether they were produced by plants classified in the "Motor Vehicle" or "Motor-Vehicle Bodies and Motor-Vehicle Parts" Industries.

Origin and Growth of the Industry

The period from 1890 may be said to have witnessed the origin of the industry in a commercial sense. From an examination of Census figures made by the Automobile Manufacturers Association, it is stated that there were but four automobiles manufactured in the United States in 1895. The subsequent expansion of the industry is indicated in Table I.

TABLE I

Production, Wholesale Value, and Registration of
All Cars and Trucks, for Specified Years

Year	Production (No.of Units)	Wholesale Value a/ (in Millions)	Number of Registrations
1900	4,192	\$ 4.9	8,000
1905	25,000	40.0	78,000
1910	187,000	225.0	468,500
1915	969,300	701.8	2,445,666
1920	2,227,349	2,232.4	9,231,941
1925	4,427,800	3,015.2	19,937,274
1929	5,621,715	3,576.6	26,501,443
1931	2,472,359	1,426.7	25,832,884
1932	1,431,367	793.0	24,115,129
1933	1,986,208	987.4	23,827,290

Source: National Automobile Chamber of Commerce, <u>Automobile Facts and Figures</u>, (1934 Edition)

A/ These figures are lower than those shown in the discussion of "Value of Products" and in Table XIII below. The difference is in part, at least, due to the inclusion in the Census figures in the latter table of the value of goods made as secondary products of the Motor Vehicle Industry and also to the inclusion of the value of fire apparatus, etc

For the year 1934, the Automobile Manufacturers Association estimated that factory sales of cars and trucks totaled 2,753,831 units, having a whole-sale value of \$1,470,431,634.

The important position which the Industry has come to occupy in the national economy may be judged from data contained in the United States Summary of the Retail Census, which indicated that sales of the motor vehicle retailing trade which were \$6,407,512,000 in 1929 and \$2,127,720,000 in 1933 accounted for 13.0 per cent and 8.5 per cent of total retail sales of the nation in the respective years.

During its period of growth and in its majority the Industry has displayed characteristics which are now inevitably associated with it. Of these,

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the most striking is the small number of separate enterprises comprising it. This feature is a natural result of the very large investment required for mass production of completed units whose cost runs into hundreds of dollars. A consequence of this concentration of production into the hands of a few, whose individual products are well-recognized, has been the development of a specialized mechanism of distribution, the dealer system, which has served as a model in the formation of similar methods adopted by many other industries. Under this system each manufacturer has a group of representatives in every state, usually handling his own product exclusively. The welfare of the group is so bound up with that of the manufacturers that a frequently—used gauge of the prospects of any manufacturer is the increase or decrease in the number of dealers handling his make of car.

Number of Companies

The total number of companies which reported to the Automobile Manufacturers Association under the Code for the Automobile Manufacturing Industry is shown by states in Table II.

TABLE II

Number of Companies, 1934

State	September, 1934
U. S. Total	75 <u>a</u> /
California	3
Colorado	1
Illinois	6
Indiana	G
Maryland	1
Massachusetts	1
Michigan	21
New Jersey	2
New York	9
North Carolina	1
Ohio	10 <u>b</u> /
Pennsylvania	8 <u>c/</u>
Texas	1
Washington	1
Wisconsin	4

Source: Code Authority (Automobile Manufacturers Association).

The number of manufacturers included in the Census classification "Motor Vehicles" in 1933 was 90 (counting the General Motors Organization as 6). It is believed that the difference between the Census and Code Authority figures is in part accounted for by the inclusion of companies manufacturing fire apparatus, etc. in the former. Also the number of companies may have decreased between 1933 and 1934.

- b/ International Harvester headquarters are in Chicago, but since its biggest plant is in Springfield, Chic, it is counted in Ohio.
- c/ Mack Trucks headquarters are in New York but since its largest plant is in Allentown, Pennsylvania, it is counted in Pennsylvania. It also has two plants in New Jersey but these were not counted.

Number of Plants, by States

Table III gives the total number of plants in principal producing states. In the Code Authority tabulation, when a company has more than one manufacturing unit in the same city, the group of units is shown in Table III as one plant.

The differences between the figures from the Census and Code Authority are believed ascribable to differences in the classifications of plants as pointed out in the Foreword and in the footnotes of Table III.

TABLE III

Number of Plants in Principal States

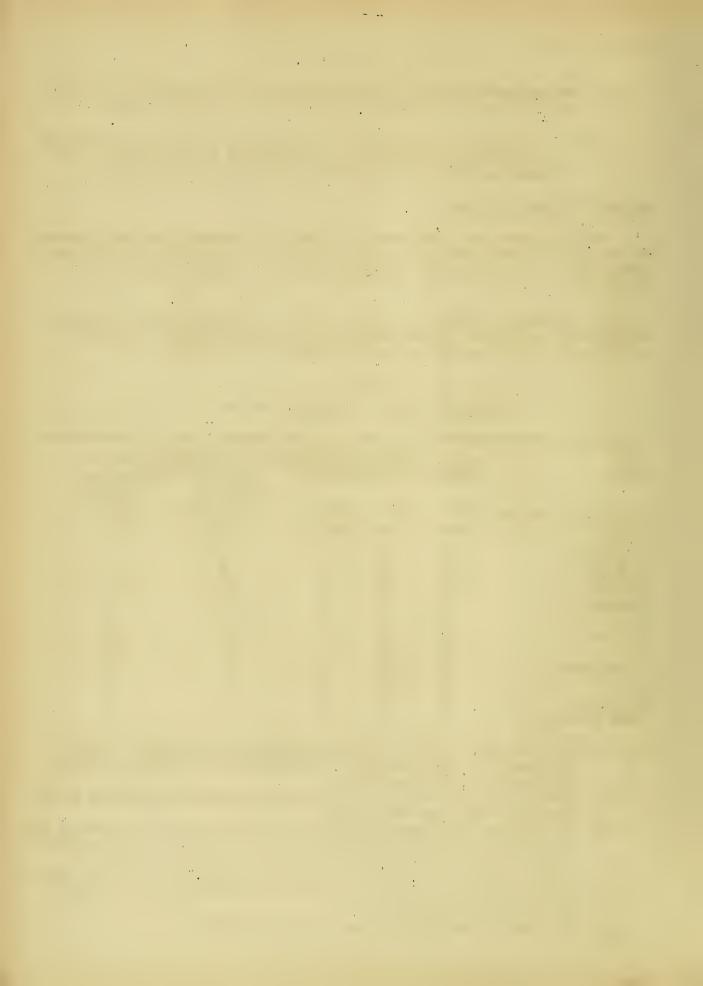
				as Reported	
State	Census	of Manuf	actures	Code Auth September	September
	1929	1931	1933	1933 <u>a</u> /	1934 a/
U. S. Total	244	178	122b/	170 <u>b</u> /	173
California	23	13	9	8	8
Illinois	19	14	10	8	8
Indiana	15	15	9	11	11
Michigan	40	29	24	28	27
New Jersey	<u>c/</u>	ු	ු	6	6
New York	18	18	$1\overline{4}$	16	16
Ohio	35	25	14	18	19
Pennsylvania	14	13	8	11	13
Texas	<u>c/</u>	<u>c</u> /	c/	8	8
Wisconsin	15	12	의 7	7	7
Other States	65	39	27	49	50

Source: Data for 1929, 1931 and 1933 from <u>Census of Manufactures</u>, "Motor Vehicles;" for September 1933 and 1934 from Code Authority (Automobile Manufacturers Association).

a/ Number of plants refers to those owned by companies reporting to the Code Authority, (See Table II).

b/ The apparent discrepancy between the two 1933 figures is probably due to the fact that the Census classification does not include separate plants engaged wholly in the manufacture of bodies or parts even though owned and operated by automobile manufacturers. On the other hand, it includes manufacturers of fire apparatus, etc., who were not covered by this Code.

c/ Not shown separately; included in "Other States."



Capital Invested

Capital invested in the Industry serves as a further gauge of its size and growth. Estimates relative thereto are presented in Table IV.

TABLE IV

Estimates of Capital Invested in the Automobile Manufacturing Industry, 1919 - 1933 a/

Year Cars	Trucks	Total
7.07.0		
1919 \$ 784,660,76	1 \$230,782,577	\$1,015,443,338
1920 897,953,60	0 306,425,000	1,204,378,600
1,134,166,00	•	1,423,500,000
1922 1,154,103,33	5 302,546,620	1,456,649,955
1923 1,281,364,30	0 290,358,100	1,571,722,400
1,373,372,42		1,691,050,112
1925 1,503,290,06	2 384,738,748	1,888,028,810
1,646,589,75	9 442,908,566	2,089,498,325
1,643,989,11	6 436,668,548	2,080,657,664
1928 1,578,021,20	7 387,289,301	1,965,310,508
1929 1,518,714,81	• •	1,956,687,661
1,442,275,65	•	1,880,808,223
1,215,200,00	0 380,600,000	1,595,800,000
1,118,600,00	•	1,489,900,000
1,012,548,00	· · · · · · · · · · · · · · · · · · ·	1,348,966,000

Source: National Automobile Chamber of Commerce, <u>Automobile Facts and Figures</u>, (1934 Edition).

a/ These figures represent net tangible assets of United States motor vehicle manufacturers, and do not include parts, accessory, body and tire manufacturers. Net tangible assets are determined by deducting good will and current liabilities from total assets.

Number of Failures

It is to be expected that an industry showing such large increases in volume of sales would attract many new firms; likewise it may be expected that severe competition would result in many failures. A record of companies entering and leaving the Industry for the period from 1902 to 1926 is given in Table V. It should be noted that this tabulation covers only the passenger—automobile industry.

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TABLE V

Number of Companies Entering, Leaving, and Remaining in the Passenger Automobile Industry, 1902 - 1926.

Year	Number of En- trances	Number of Exits	Number of Companies Remaining	Year	Number of En- trances	Number of Exits	Number of Companies Remaining
1902			12	1915	1.0	6	75
1903	13	1	24	1916	6	7	74
1904	12	1	35	1917	8	6	76
1905	5	2	38	1918	1	6	71
1906	6	1	43	1919	10	.4	77
1907	1	0	44	1920	12	5	84
1908	10	2	52	1921	5	1	88
1909	18	1	69	1922	4	9	83
1910	1	18	52	1923	1	14	70
1911	3	2	53	1924	2	15	57
1912	12	8	57	1925	0	8	49
1913	20	7	70	1926	1	6	44
1914	8	7	71				

Source: Epstein, Ralph C., The Automobile Industry (1928) Chart 28.

Of particular significance is the decline from 1921 to 1926 in the number of concerns remaining in the industry. Fully developed data of identical character for the years 1927 to 1934 are not available; it may be noted, however, that it was during this period that makes previously enjoying considerable public favor disappeared from the market.

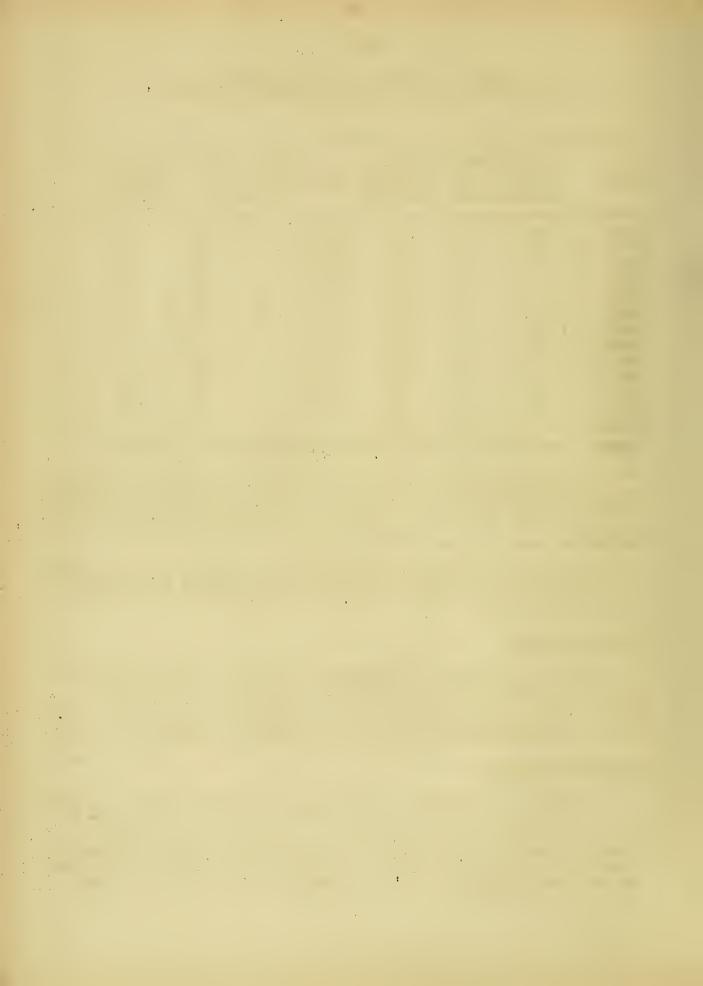
According to Dun and Bradstreet there were 8 failures in the Automobile Manufacturing Industry in 1934. No failures were recorded for the first three months of 1935.

Value of Products

Reports of the Census of Manufactures show that the value of products of the Motor Vehicle Industry declined from \$3,722,800,000 in 1929 to \$1,568,000,000 in 1931 and still further to \$1,097,000,000 in 1933. As previously stated, it is believed that the Census figures on value may be considered as approximately applicable to the Industry as defined by the Code.

Volume of Production

The volume of production of passenger cars and motor trucks, as measured by new car registrations, is shown for leading members of the Industry in Tables VI and VII. New car registration in 1934 showed a substantial increase over 1933. The information on passenger cars indicates, however, that despite this improvement, the number of registrations in 1934 was less than half the 1929 registrations. The improvement has been very uneven among



different members of the Industry; a number of the smaller producers - for example, Willys Overland showed in 1934 only a small fraction of their 1929 registrations.

TABLE VI

New Passenger Car Registrations for Specified Members of the Industry

1929	1931	1933	1934
4,025,300	1,919,560	1,493,794	1,888,557
1,315,700	830,390	646,557	752,375
1,362,400	535,240	313,225	532,589
356,900	229,830	385,666	432,195
94,400	51,360	38,394	43,300
262,900	62,100	38,777	59,817
62,600	19,320	10,128	12,887
•	39,600	11,353b/	23,616
•	51,6 50	15,314	6,576
•	17,530	6,726	6,566
•	16,350	9,081	6,552
•	31,130	5,038	5,536
•	6,800	3,623	3,854
	2,960	3,675	1,057
	*****	3,310	953
11,100	3,900	1,329	360
104,500	21,400	1,598	324
	4,025,300 1,315,700 1,362,400 356,900 94,400 262,900 62,600 108,800 206,700 45,900 46,200 19,300 17,900 11,100	4,025,300 1,919,560 1,315,700 830,390 1,362,400 535,240 356,900 229,830 94,400 51,360 262,900 62,100 62,600 19,320 108,800 39,600 206,700 51,650 45,900 17,530 46,200 16,350 19,300 31,130 17,900 6,800 2,960 2,960 3,900	4,025,300 1,919,560 1,493,794 1,315,700 830,390 646,557 1,362,400 535,240 313,225 356,900 229,830 385,666 94,400 51,360 38,394 262,900 62,100 38,777 62,600 19,320 10,128 108,800 39,600 11,353b/ 206,700 51,650 15,314 45,900 17,530 6,726 46,200 16,350 9,081 19,300 31,130 5,038 17,900 6,800 3,623 2,960 3,675 3,310 11,100 3,900 1,329

Source: Chilton Company, Inc., <u>Automotive Industries</u>, February 27, 1932, page 176, and February 9, 1935, page 176.

New Truck Registrations for Specified Members of the Industry, 1933 and 1934.

TABLE VII

Member of Industry	1933	1934
Total	245,869	403,886
General Motors Ford Motor Chrysler Motor International Harvester Diamond T	106,482 62,397 28,034 26,658 4,139	167,956 128,250 48,252 31,555 5,440

a/ Pierce Arrow is member of Studebaker Corp.

b/ LaFayette is not included for 1933.

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TABLE VII (Cont'd)

Member of Industry	1933	1934
Reo Motor Co.	3,042	5,035
White Truck Co.	1,384	3,963
Federal Truck Co.	1,360	1,962
Mack Truck Co.	1,652	1,830
Studebaker Truck Co.	1,872	1,697
Brockway	875	1,213
Auto-Car Co.	1,127	1,139
Stewart -	684	736
Indiana	1,252	729
American Austin	1,053	494
All Others	3,858	3,635

Source: Chilton Company, Inc., <u>Automotive Industries</u>, February, 1935, page 176.

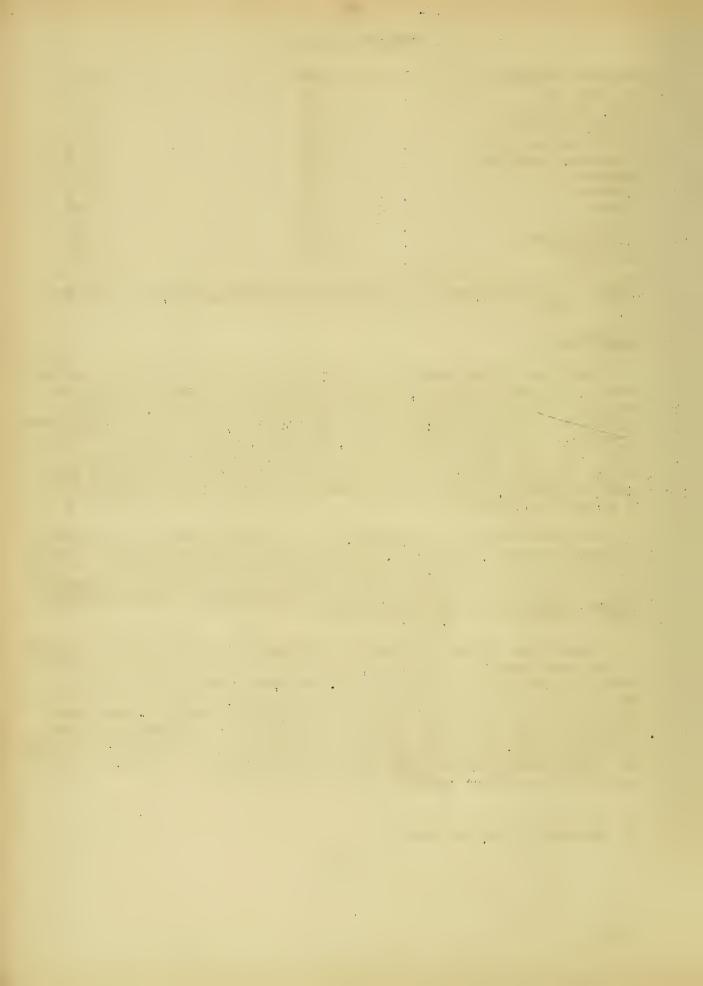
Competition

The nature of the competition affecting the Industry is in some respects highly individual. In the first place, competition is entirely within the Industry — the automobile has no real competitor as a means of personal, quick, and ever-ready transportation; and it is doubtful that, as instruments of pleasure, the rivalry offered by water craft, airplanes, musical instruments, etc., has any significant effect on sales volumes. As a means of freight transportation, the importance of the automobile is not fully developed; certainly, at present, the incursion into that field is being made by it rather than against it.

Competition within the Industry is, again, almost entirely among domestic manufacturers. There are, to be sure, efforts by foreign makers—notably in the expensive passenger car field—to sell in the United States. The volume of their sales is so small as to be immaterial; according to <u>Automobile Facts and Figures</u>, 1/ the number of motor vehicles imported into the United States in 1929 was 750 and in 1933, 534.

Competition within the Industry is extremely keen, and since the product of each manufacturer is readily identifiable, methods of competition involve means of direct and swift appeal to the consumer. Thus, a price change on the part of one producer is likely to lead to other revisions, not only for cars in the same price class but also in immediately higher or lower price brackets. It is to be noted in this connection that the Industry does not establish varying prices for different geographical areas within the country; the only variable element in the cost to the purchaser is the cost of transportation from point of shipment to point of delivery.

^{1/} Editions of 1929 and 1934.



Chapter II

TABOR STATISTICS

Number of Employees

Factory employment in the Automobile Industry declined from an average of more than 425,000 workers in 1929 to less than 200,000 in 1933. Three employment series are presented in Table VIII. The series in the second column has been obtained from reports from practically 100 per cent of the manufacturers operating under the Code for the Automobile Manufacturing Industry. Since this series is not available prior to September 1933, a series based on thirteen of the currently reporting companies who could furnish pre-Code data are presented in the first column. The figures in the third column have been compiled by the National Automobile Chamber of Commerce. Although the April 1934 figure of the Chamber is about 40,000 less than the April figure in the second column, it is believed that in a general way the Chamber figures may be considered reliable indicators of employment prior to 1933.

Seasonality of Employment

The irregularity of employment in the Automobile Industry which results in part from the introduction of new models in the early spring months is one of the chief problems of the industry.

As shown in Table VIII above, during the year 1934, the number of factory employees fluctuated between 208,188 in October to 368,565 in April. The suggestion has been made that "regularization can be substantially achieved by fall announcement of new models and a fall date for the Automobile show." 1/

Employees in Related Industries

Table IX is presented to indicate in a broader way the importance of the Automobile Industry as a factor in national employment. A significant fact brought out by this table is that the 190,027 workers directly employed in 1933 by the Automobile Manufacturing Industry formed only a small fraction of the total workers associated with the automobile and related industries.

^{1/} Research and Planning Division, NRA, "Preliminary Report on Study of Regularization of Employment and Improvement of Labor Conditions in the Automobile Industry"
(January 23, 1935), Page 10 of Summary.

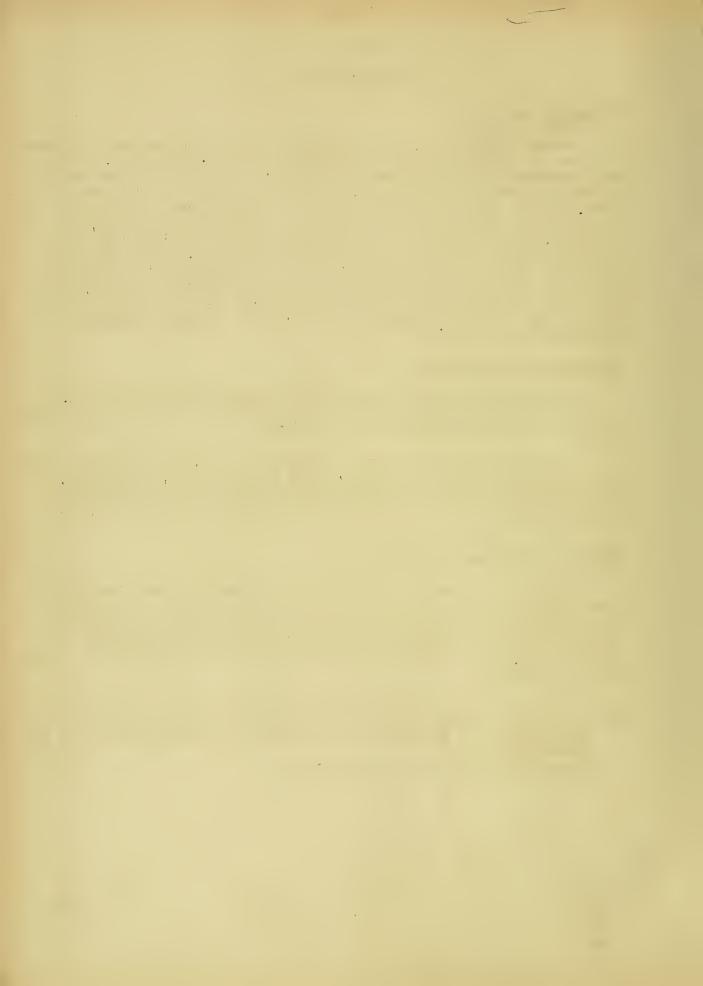


TABLE VIII

IN THE INDUSTRY AS DEFINED BY THE CODE

Total Annual	Hage 6/	\$775,479 397,207 233,508			
Total Weekly Payroll Entire	b d/(Thousands		# 689 869 869 869 869 869	らっちらきょうらられます。 でうっかきょうのまるまま いろこうがはのごまますか	9,515
	Total of	427,459 270,464 190,027		323, 810	
ry Employees	Entire Industry b/		223,094 136,594 136,015 218,981	# www.www.ww.ww.ww.ww.ww.ww.ww.ww.ww.ww.w	344,126 377,506 377,648
Rumber of Factory	Thirteen Companies 2/	279, 185 236, 981 165, 035	185,698 156,968 148,945	2000 2000 2000 2000 2000 2000 2000 200	
	Period	1929-Average 1931-Average	1933-September October Movember December	1934-Jenuary February March April May June July August September October November	1935-January Fabruary Marob April

Source: As indicated in footnotes

- The figures in this column are for thirteen companies (or groups of companies) reporting under the Automobile Gode which also supplied pre-Gode data and are taken from Research and Planning Division, NRA, Preliminary Report on Study of Regularization of Employment and Improvement of Labor Conditions in the Automobile Industry, Appendix A, (January 23, 1935) Exhibit 4. Data cover production employees and auxiliary (maintenance and service) employ ees. ला
- (maintenance and service) employees. Employment and payroll data beginning September 1933, have been compiled by the Division of Research and Planning, WRA, from monthly reports submitted by individual automobile manufacturers through the Automobile Manufacturers Association. For all practical purposes 100 iper cent of the automobile manufacturing concerns have submitted reports each month. Data cover production employees and auxillary (maintenance and strutes) employees)
- (1934 Edition). not include, parts, Mational Automobile Chamber of Communoe, Automobile Facts and Figures, (19) accessory, body or tire factories 01
- Data cover production employees and auxiliary Average veekly values of monthly data. (maintenance and service) employees. ना
- Average monthly figures.



TABLE IX

EMPLOYMENT IN THE AUTOLOTIVE AND RELATED INDUSTRIES, BY KIND OF EMPLOYEES, 1933

ind of Employees	Number of Workers
imployed directly:	
Motor Vehicle Factory Workers	190,027
Tire, parts and accessory factory workers	200,000
Dealers and salesmen, motor vehicles, parts,	
accessories, tires	290,000
Garage and remair shop employees	405,000
Bus, Taxi and private chauffeurs	450,000
Truck drivers	1,500,000
Automobile financing, insurance, advertising	
and niscellaneous	12,000
Total employed directly	3,047,027
moloyed indirectly:	
Gasoline refining and retailing	420,000
Iron and steel workers	60,000
Non-ferrous metal workers	10,000
Railroad and steamship workers	50,000
Lumber and woodworkers	5,000
Electric power and fuel workers	3,000
Highways	900,000
Hiscellaneous other raw material supplies	30,000
Total employed indirectly	1,478,000
Grand Total	4,525,027

Source: National Automobile Chamber of Commerce, <u>Automobile Facts and</u> Figures, (1934 Edition),

Total Annual Wages

The only figures available on total annual vages for the Industry as defined by the Code are those from the National Automobile Chamber of Commerce shown in Table VIII. These figures indicate that total vages have declined from \$775,479,000 in 1929 to \$233,508,000 in 1933. As has been pointed out in the discussion of employment, it is believed that the Chambe figures give, in general, an accurate picture of conditions.

Total weekly payrolls for the entire Industry are shown in Table VIII. Since September 1933 the Industry's total weekly payroll has ranged between \$3,269,000 in November 1933 and \$11,302,000 in April 1935.

Per Cent Labor is of Value of Products

In 1929 the wage bill of \$775,479,000 formed approximately 22 per cent of the estimated wholesale value of product of \$3,576,600,000. In 1933 wages formed slightly less than 24 per cent of the total value (\$233,508,000 out of \$987,400,000). Some caution should be exercised in the use of these 8543



figures since it is not possible to determine precisely the comparability of the wage and value data. 1/

Hourly Wage Rate

From January 1934, average hourly earnings rose from 63.8 cents to 74.4 cents in October, 1934. During the first four months of 1935 hourly earnings ranged between 71.6 and 72.8 cents. These data, which are shown in Table X, are not available prior to September 1933 nor are they available for males ar females separately.

Hours Worked Per Week

As shown in Table X, the working week has ranged between 26.7 hours in November 1933 and 40.9 in April 1935. Comparable data for males and females separately are not available.

Weekly Earnings

Weekly earnings are closely associated with the length of the working week and tend to rise as it lengthens. In the Automobile Industry weekly earlings have ranged from \$17.57 in November 1935 to \$29.76 in April 1935. (See Table X). The Automobile Industry in April 1935 paid higher average weekly earnings than any other Industry shown in the Bureau of Labor Statistics industry classification which appears in the Trend of Employment.

Employees Under 16 Years of Age

Children have not been employed in the Automobile Industry in significar numbers. The Census of Occupations showed only 112 children 10 to 15 years old employed in automobile factories in 1930. 2/ More recent information is not available.

The National Automobile Chamber of Commerce figures on wholesale value were used rather than the Census value of products as it was thought thes figures would compare more closely with the wage data which were also estimated by the Chamber.

^{2/} Fifteenth Census of the United States: 1930, Occupation Statistics, "United States Summary," p. 88.

TABLE X

AVERAGE HOURLY AND WEEKLY EARNINGS AND HOURS WORKED PER WEEK BY MONTHS, SEPTEMBER 1933 - APRIL 1935

		Average per Employee	a./
	Hourly	Weekly	Weekly
Month	Earnings	Earnings	Hours
1933	40.000	haa Ra	777 C
September	\$0.656	\$20.72	31.6
October	.657	18.11	27.6
November	. 659	17.57	26.7
December	.643	19.48	30.3
1934			
January	.638	21.45	33.6
February	.650	24.34	37.4
March	.677	26.67	39.4
April	.724	27.01	37.3
May	.725	23.26	32.1
June	.733	24.33	33.2
July	.733	23.18	31.6
August	.741	21.92	29.6
September	.741	21.31	28.8
October	.744	22,28	30.0
November	.743	22.60	30.4
${\tt December}$.727	25.65	35.3
1935			
January	.717	27.65	38.6
February	.716	28.58	39.9
March	.721	29.31	40.6
April	.728	29.76	40.9
April			40.9

Source: Computed by the Division of Research and Planning, NRA, from monthly reports submitted by individual automobile manufacturers through the Automobile Manufacturers Association. For all practical purposes 100 per cent of the automobile manufacturing concerns submitted reports each month.

<u>a/</u> Covers production employees and auxiliary (maintenance and service) employees.

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Employment and Wages in Principal States

Incomplete information on the number of employees in leading states and their total wages has been assembled in Table XI. This table is based on Census data for the classification "Motor Vehicles" which are believed to cover only about half the employees shown in Table VIII. 1/ It is presented merely to indicate the concentration of the Industry in Michigan, Ohio, Indiana, and a few other states.

TABLE XI

WAGE EARNERS AND WAGES IN THE "MOTOR VEHICLES" INDUSTRY,
BY PRINCIPAL STATES, 1929, 1931, 1933

	Number o	Number of Wage Earners			Total Annual Wages		
State	1929	1931	1933	1929 (Mi	1931 llions)	1933	
U. S. Total	226,116	134,866	97,869	\$366.6	\$156.7	\$103.8	
California	5,443	3,316	2,121	7.9	4.7	2.2	
Illinois	3,234	2,244	2,268	5.0	3.0	<u>a</u> /	
Indiana	20,573	12,507	7,033	30.6	14.4	6.6	
Michigan	108,796	64,077	59,724	188.8	75.2	66.6	
New York	10,603	6,016	3,286	17.3	8.1	<u>a</u> /	
Ohio	28,727	14,932	6,938	43.9	14.9	6.6	
Pennsylvania	7,731	5,853	4,942	11.7	7.1	4.5	
Wisconsin	10,241	5,856	2,825	16.2	5.6	<u>a</u> /	
All Other States	30,768	20,065	8,732	45.1	23.8	17.2	

Source: Census of Manufactures, "Motor Vehicles."

a/ Data not available.

^{1/} For discussion of this difference, see Chapter I, section on "Definitions of the Industry."

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Chapter III

MATERIALS: RAW AND SELI-PROCESSED

Cost of Materials

The amounts spent by the Automobile Industry for materials, fuel, and purchased electric energy may be placed at approximately \$2,401,000,000 in 1929, \$1,044,000,000 in 1931, and \$757,000,000 in 1933, according to the Census of Manufactures reports on the "Motor Vehicles" Industry.

Although the Code includes the making of bodies and parts not reported under this latter classification, but rather under "Motor Vehicle Bodies and Motor Vehicle Parts," the fact that the cost of materials going into those bodies and parts which emerge finally as vehicles would be included in the total cost of materials reported by the vehicle manufacturers means that the data reported by them can be considered roughly applicable to the Industry as defined by the Code. The qualification already noted in the use of Census data because of their inclusion of fire apparatus, etc., applies to the cost of materials.



The importance of the Industry as a factor in the consumption of raw, semi-processed and fully-processed materials may be judged from Table XII.

TABLE XII

MATERIALS USED IN THE AUTOMOBILE
MANUFACTURE AND REPAIR, 1933

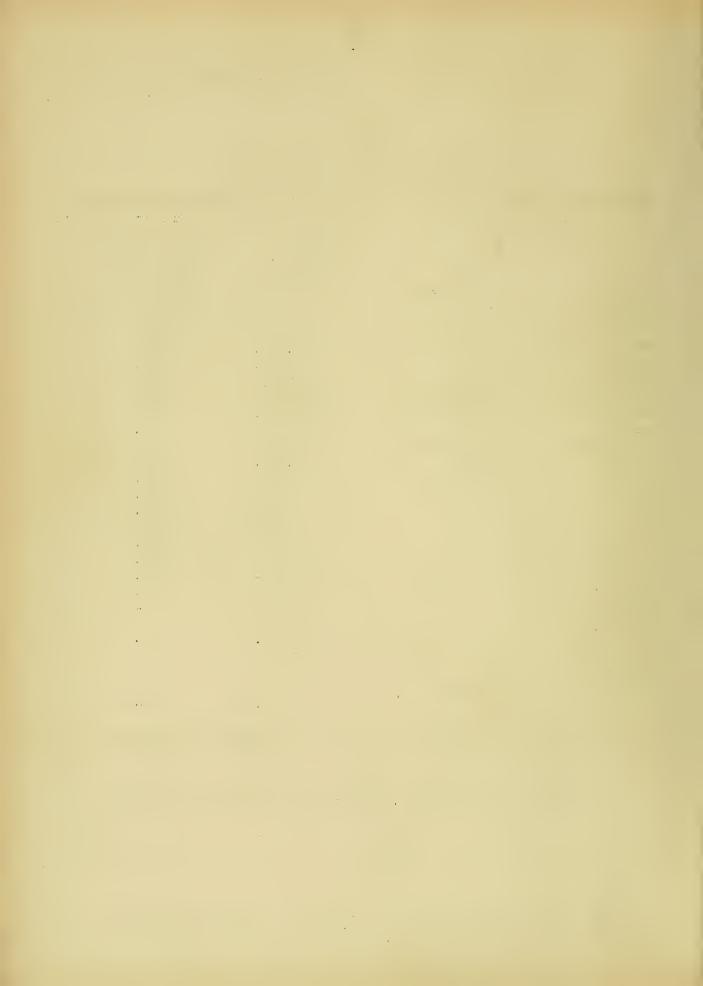
Material	Unit (In Thousands)	Anount Used in Manu- facturing and Repairs	Per Cent of Total Produc- tion Used by Automobile Industry
Steel a/	gross tons	3,250.0	19.2
Iron, malleable	tons	174.0	55.0
Gray iron	tons	397•3	9•3
Rubber	long tons	293.0	73.0
Plate glass	square feet	34,802.5	740.0
Lumber, hardwood	board feet	308 , 990.0	14.0
Leather,			
upholstery	square feet	6 , 805.0	54.0
Aluminum	tons	10.0	23.5
Copper	tons	64.0	15.4
Tin	long tons	7.2	11.1
Lead	tons	156.0	35.4
Zinc	tons	25.0	7.1
Nickle	pounds	6,750.0	24.0
Cotton b/	bales	431.5	6.9
Mohair	pounds	3,500.0	22.0
Lumber, softwood Cloth,	board feet	164,388.0	p=0
upholstery b/	yards	22,050.0	
Paint and			
Lacquer b/	gallons	6,685.0	+
Hair and			
Padding b/	pounds	25,257.0	•

Source: National Automobile Chamber of Commerce, <u>Automobile Facts and Figures</u>, (1934 Edition) except where otherwise indicated.

a/ Figures from Iron Age. Do not include tonnage sold by steel jobbers to repair shops or steel sold to automobile manufacturers in the form of bolts, nuts, and rivets.

b/ For use in manufacturing notor vehicles in the United States only.

The usefulness of the figures presented in Table XI is somewhat lessened by the fact that they include materials used in repair work. The



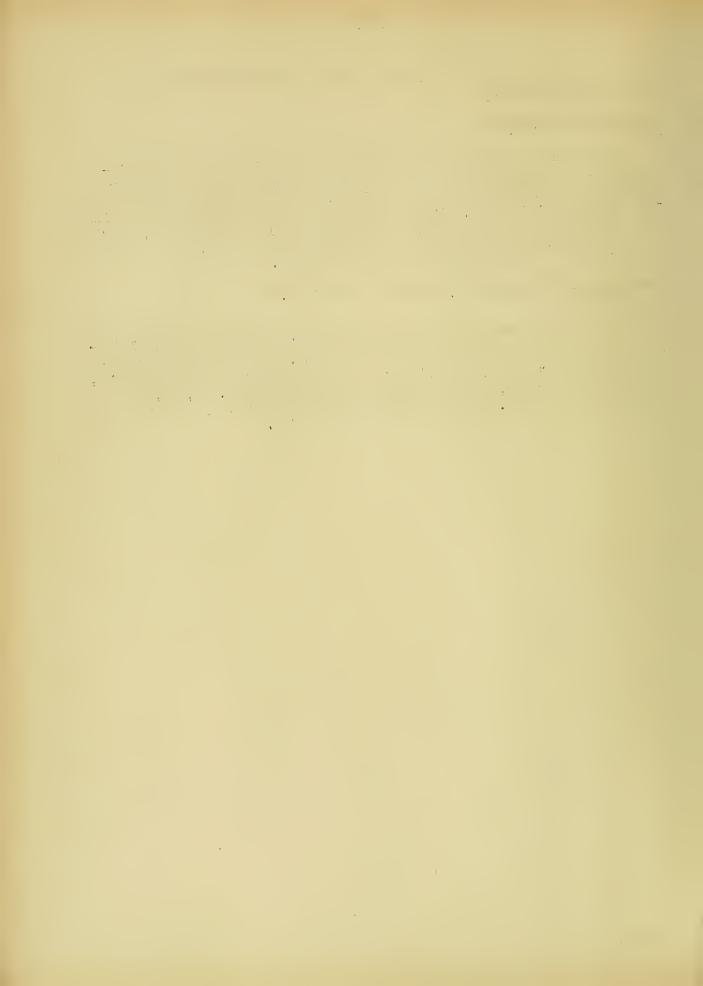
exact proportion of these materials going into the manufacture of new cars is indeterminable.

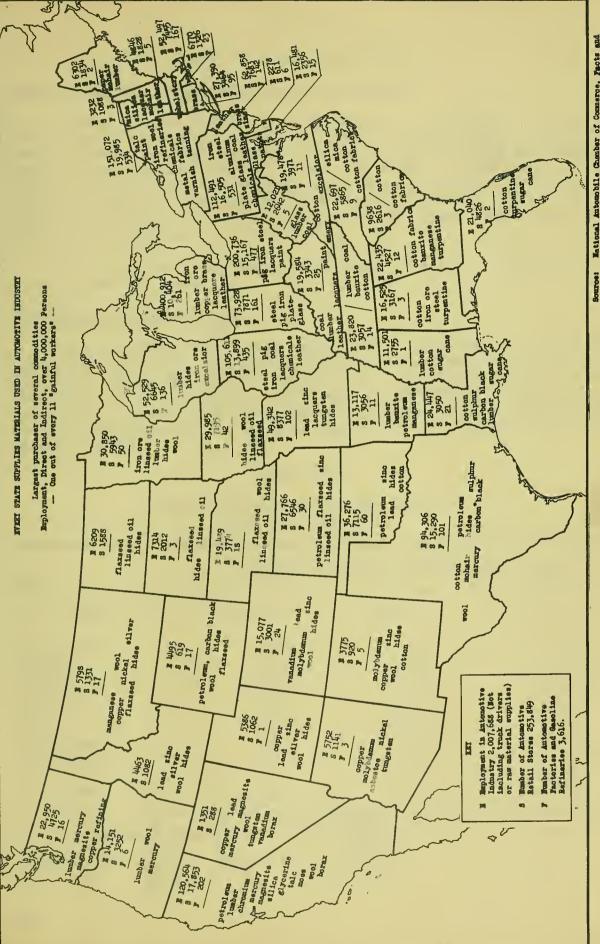
Source of Raw Materials.

The domestic sources of raw materials used in the Industry are indicated by the accompanying map of the United States which shows the raw material contributed by each state. Map I, in conjunction with Tables III above and XVIII below, gives striking evidence of the manner in which the Industry draws its materials from every corner of the country, carries on its manufacturing processes in comparatively few states, and distributes its finished product throughout the United States.

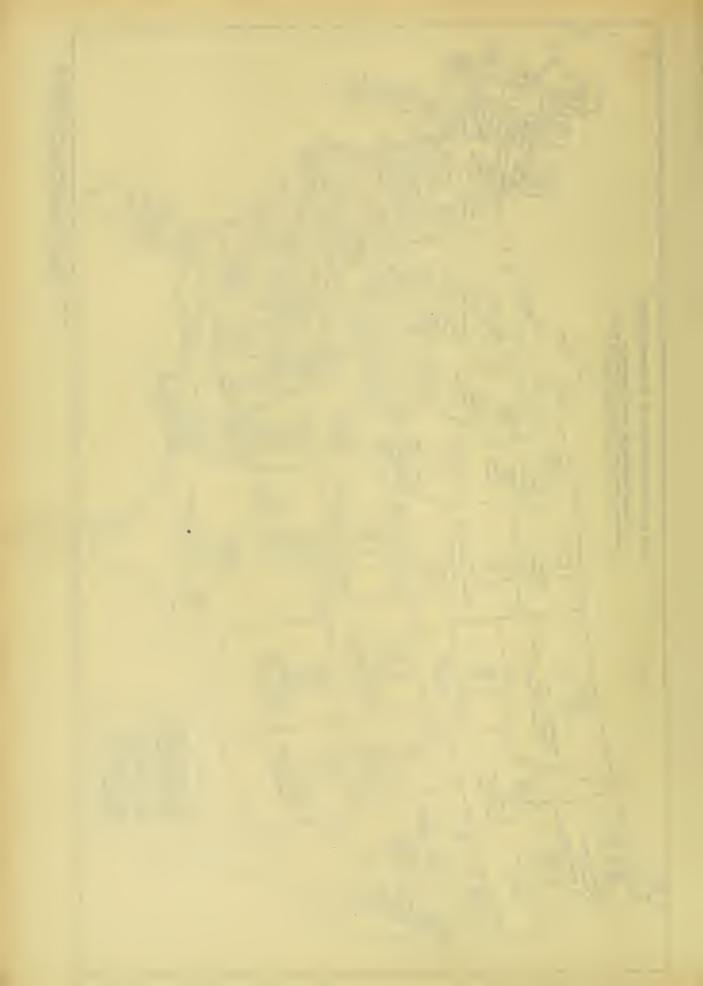
Amounts Spent for Machinery, Principal Materials, and Fuel

Data are not available on the amounts spent by the Autonobile Industry for various raw naterials nor for equipment. The Census of Manufactures report on "Motor Vehicles" for 1929 subdivides the total of \$2,401,511,763 for materials, fuel and purchased energy into \$2,379,498,089 for materials and \$22,013,674 for fuel and purchased energy. A similar allocation of costs is not given for 1931 and 1933.





Estional Automobile Chamber of Commerce, Estis and Figures of the Automobile Industry, 1972, plig-by.



Chapter IV

PRODUCTION AND DISTRIBUTION

Value and Volume of Production in Principal States

Between 1929 and 1933 the relative importance of Michigan in the Automobile Industry, as measured by value of products, has increased. Computations made from the figures in Table XII show that in 1929 and 1931, Michigan produced between 40 and 42 per cent of the total value of products in this Industry and that in 1933 the proportion has risen to almost 54 per cent. It should be emphasized that this increase is merely relative. Every state listed in Table XIII, including Michigan, has experienced severe declines in value of goods produced.

A corresponding distribution of the number of vehicles produced in these states is not available.

Shipments Across State Lines

Complete information on interstate shipments of automobiles cannot be shown, but the figures assembled in Table XIV are indicative of the interstate movement of the products of the Industry. This table deals only with Chevrolets, but it shows that in 1934 more than 350,000 new Chevrolets were registered in states which had neither Chevrolet factories nor assembly plants Similar tables on other leading makes would unquestionably present the same general picture.

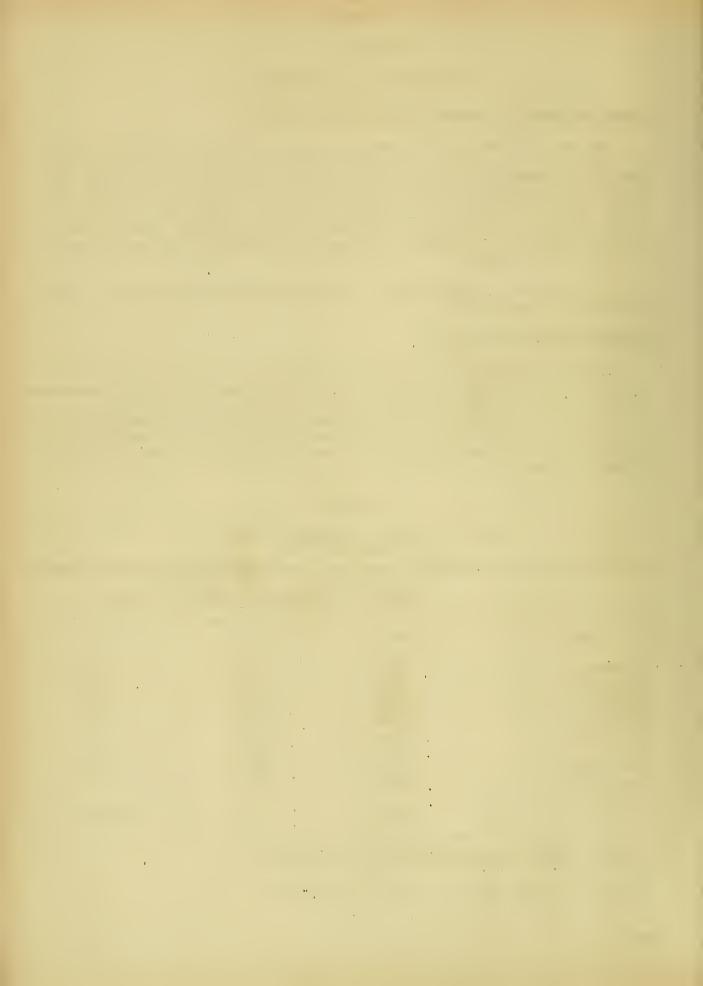
TABLE XIII

VALUE OF PRODUCTS BY PRINCIPAL STATES
1929, 1931, AND 1933

Value of Products (In Millions)				
State	1929	1931	1933	
U. S. Total	\$3,722.8	\$1,568.0	\$1,097.0	
California	138.3	67.7	46.1	
Illinois	62.4	25.3	<u>a</u> /	
Indiana	208.2	114.5	45.9	
Michigan	1,549.7	635,9	588.3	
New York	232.3	153.4	<u>a</u> /	
Ohio	387.4	136.6	49.7	
Pennsylvania	100.5	41.1	36.2	
Wisconsin	219.2	97.2	<u>a</u> /	
All Others	824.8	295.9	330.8	

Source: Census of Manufactures, "Motor Vehicles."

a/ Data not available, included in "All Others."



NEW CHEVROLET REGISTRATIONS, IN STATES HAVING NO CHEVROLET FACTORIES OR ASSEMBLY PLANTS, 1934

TABLE XIV

State	Number of Reg- istration	State	Number of Reg- istration
Total	358,939		
Alabama Arizona	10,680 1,906	Nevada New Hampshire	665 2,255 15,495
Arkansas Colorado Connecticut	6,059 5,556 5,909	New Jersey New Mexico North Carolina	2,261 16,824
Delaware District of Columbia	1,511 4,246	North Dakota Oklahoma	2,790 13,530
Florida Idaho Illinois	7,848 2,364 27,863	Oregon Pennsylvania Rhode Island	73,688 35,934 2,928
Indiana Iova	14,574 13,126	South Carolina South Dakota	7,207 2,569 9,637
Kansas Kentucky Louisiana	11,077 8,310 8,560	Tennessee Texas Utah	9,637 37,997 1,939
Maine Massachusetts	3,123 16,337	Vermont Virginia	1,225 10,408
Minnesota Mississippi Montana	12,639 6,848 2,897	Washington West Virginia Wyoming	5,619 5,993 1,462
Nebraska	7,088	MA QUITTIP	2,200

Source: Automobile Topics, February 16, 1935, pp. 106-107.

Value and Volume of Products Exported

The decline which began in 1930 in both the number and value of motor vehicles exported from the United States was checked in 1933. As can be seen from Table XV, 1933 showed noticeable improvement over 1932, but was neverthe less much below the levels of 1931 and the two preceding years.

TABLE XV

VALUE AND VOLUME OF MOTOR VEHICLES EXPORTED,

1929 - 1933

	Value (Thousands)		Number a/	
Year	Passenger Cars	Motor Trucks	Passenger Cars	Motor Trucks
1929	\$239,626	\$113,063	451,079	283,132
.930	110,356	56,924	247,764	157,951
.931	53,048	26,302	134,048	107,509
1932	25,633	12,211	72,889	47,350
.933	33,945	20,691	98.115	78,428

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(Continued on next page)



TABLE XV (Continued)

Source: National Automobile Chamber of Commerce Automobile Facts and Figures (1934 Edition)

a/ U. S. exports including foreign assemblies.

Advertising

Partial expenditures for national radio and magazine advertising by the Automotive Industries 1/ are shown in Table XVI. It will be noted that the amounts spent for radio broadcasting were higher in 1933 and 1934 than in 1929. Expenditures for national magazine advertising in 1934 were only about half as high as in 1929. The data on radio advertising are for the National Broadcasting Company and the Columbia Broadcasting System and include only national advertising, embracing the various networks or combinations thereof. Also, the figures include only the cost of the facilities and not that of the talent.

In addition to the radio and magazine advertising the Automobile Industry uses a large amount of space in local newspapers, but the volume and cost of this is not known.

TABLE XVI

EXPENDITURES FOR NATIONAL RADIO AND MAGAZINE ADVERTISING
BY THE AUTOMOTIVE INDUSTRIES a/

	Amount	Spent On
	Radio	Magazine
Year	Broadcasting b/	Advertising c
	(<u>T</u> hous	ands)
1929	\$1,721	\$26,341
1931	1,314	17,648
1933	2,318	9,321
1934	3,770	13,760

Source: Denney Publishing Company, Inc., New York, as reproduced in the Survey of Current Business published by the Department of Commerce.

- a/ It is not known how closely the groups represented by these figures compare with the groups included under the Code.
- b/ The data are for the National Broadcasting Co., (Inc.) and the Columbia Broadcasting System (Inc.), and include only national advertising, embracing the various networks, or combinations thereof. They do not include the records of local broadcasting nor the cost of program talent.
- C/ Data represent the grand total cost of all advertising for all classes of national magazines. All space costs are based on advertisers' one time, or single, insertion rate as quoted in "Standard Rate and Data Service," and do not make allowance for longer contract rates.

^{1/} It is not known how closely the groups represented by these figures compare with the groups included under the Code.



Trade Marks

The entire production of the Automobile Industry is advertised and sold on a national acale under well established names or "makes."

Mode of Shipment

Modes of shipping assembled passenger cars and motor trucks from factories and assembling plants in the United States, including exports, are shown in Table XVII.

TABLE XVII

SHIPMENTS a/ OF ASSEMBLED PASSENGER CARS AND MOTOR TRUCKS,

BY MODE OF TRANSIT

Year	Machines Delivered By Railroad (Carloads of Machines)	Machines Delivered Overland	Machines Shipped by Boat
1929	733,631	1,958,738	199,576
1931	283,858	1,050,545	85,609
1932	130,820	706,977	51,103
1933	198,287	930,303	126,258

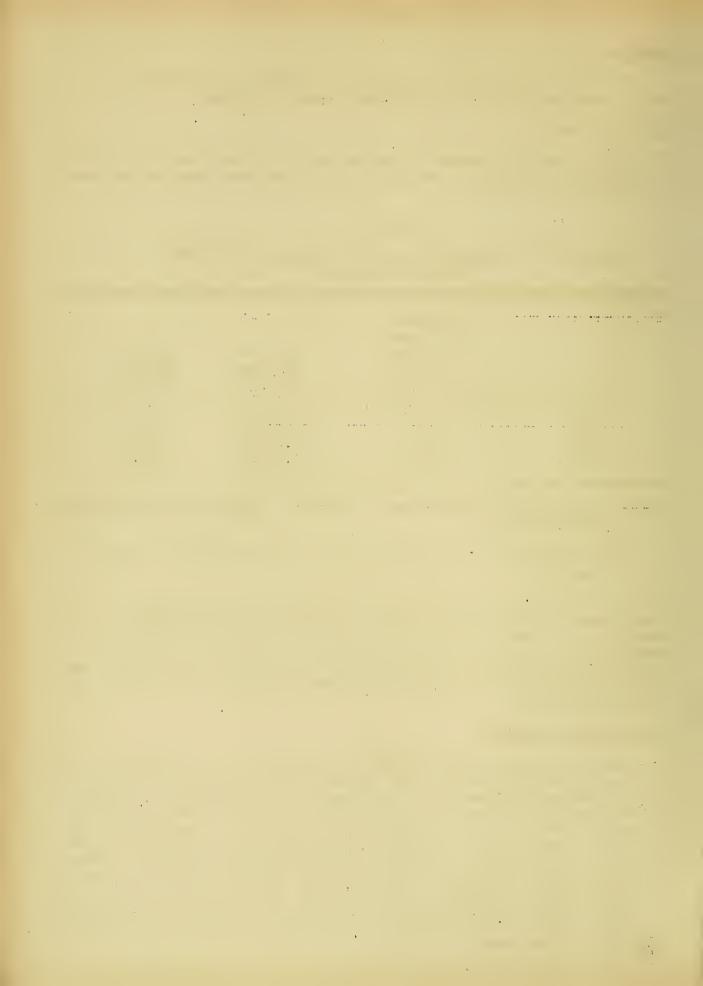
Source: National Automobile Chamber of Commerce, <u>Automobile Facts and Figures</u> (1934 Edition).

<u>a</u>/ From factories and assembling plants in United States, including exports.

The importance of railroad transportation may be underestimated at first glance since the figures are in terms of carloads rather than number of machines. It is true however, that the relative importance of railroad transportation of cars and trucks has dimished since 1929. In 1933 only 27 per cent as many carloads of cars were shipped by rail as in 1929, while comparable figures for overland and boat delivery were 47.5 per cent and 63 per cent, respectively.

Distribution of Products

The most striking characteristic of the system by which automobiles pass from manufacturer to consumer is its control by the manufacturer. The steps in the distribution mechanism are, in essence, from manufacturer to dealer, and from dealer to consumer, although actually most of the cars pass through a factory branch, or a "distributor," or both, between the manufacturer and the dealer. Many variations appear in this organization, but the units comprising it are the same: manufacturer, factory branch, distributor, dealer, consumer. Whatever variation occurs, effective control remains in the hands of the manufacturer. Consequently, dealers all over the nation watch eagerly for sales reports, production reports, and earning statements of manufacturers, for upon the manufacturer's welfare and performance, depends the extension of their dealer franchises.



Volume of Business, by States

The number of retail and wholesale automobile dealers in each state is shown in Table XVIII. At the end of 1933 there was a total of over 102,000 retail outlets and 5,430 wholesale establishments which were scattered over every state in the Union. Preliminary figures for 1934 released by the Automobile Manufacturers Association indicate that the number of retail outlets had increased to almost 106,000 and the number of wholesalers to 5,759. Of the 106,000, 36,900 were classified as car and truck dealers as compared with 35,265 at the end of 1933.

The value of volume of products sold to dealers in each state are not available. However, an indication of the amount of business done in each state can be had from Tables XIX and XX which show respectively the number of new passenger cars and trucks registered in each state in 1933. The largest numbers of registrations of both passenger cars and trucks were in New York. Pennsylvania was second in importance.



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WINNER OF RETAIL AND WHOLESALE OUTLETS. BY STATES	

			Retail			
			Dealers Sellt	70		
	Total Retail	Care and Trucke	Passenger Cars Primarily	Trucke	Repair	Wholesale
U. S. Total	4	35,265		1,139	62, 590	5,430
abana	807		267	a.	200	2
Arizona	0.7	900	000		202	% S
Arkansas	•	1.601	1,540	14	5.766	To a
Gelorado	901	•		-	b	6 3
Connect lout	1,355	204	200	t at	- 60	20
District of					1	` {
Columbia		04 00 ±	E C	d c	200	200
Florida	1.277	192		00	740	V 16
Idaho				**		100
Ill fnote	. •		-	# (316
Indiana	-	-	100°1	<u> </u>		7
Kanaka	100	700	9	R.P.	1 367	101
Kentuoky			E	17		2
Louisiana	425	293	8	<u>بر</u>	164	3
Maine	0 0		4 K		77.52 10.12	ar C
Researchisetts	2 CE 35	096	933	64	7.05	37.6
Michigan			2	197	198	199
Minnesota	3,314	-	1001	24 T	1,866	104
Missourt	3.230	100	1,014	2	- O. C.	द्ध
Montana	la .		267	28	436	33
Hobraska	1,073	070		ဥ္ရင	240	2
Now Hampshire	24.0	217	810	-	i i	°£
Non Jersey	3,428	601	933	杰 ·	8,139	181
Mot Mexico	314			1 14 1	194 673	1 4
North Carolina	-	213	•	17		73
North Dakota		3	864	. 100	271	ON .
Obio	S. S	210	1,93	0 p	N. S.	746
Oregon	-	180	336	\@1 1 F)	277	
Pennsylvania		8,968	2	131	4, 752	E OF
Rhode Jeland	EVA CH R	60 CH CO	はなる	4 A		K.S
South Dakota	_	101	i se	Z.	To the same of the	त्र
Tennessee	a	245		es e		ය
Toxas		1,421	1921	2 2	3,185 803	9 6
Versont	570	163	175	100	36.5	เส
Virginia	1,678	100	(A)	es i	3	e
Westington	_	200	21	A 64	700	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Wisconsin	3,375	1,680	1,591	2	1,698	A.
Myoming			153	_	170	10
		-				

Figures from the Chilton Company, as of February 1, 1934, as reproduced in [1934 Edition]. Source:

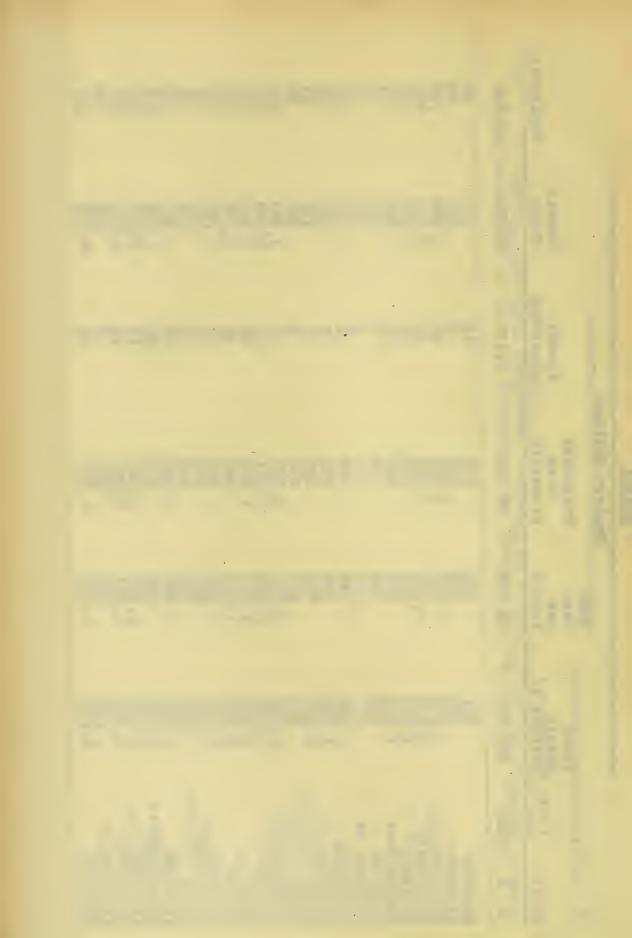


TABLE XIX

REGISTRATIONS OF NEW PASSENGER CARS, BY STATES, 1933

State	Number of Reg- istrations	State	Number of Registrations
U. S. Total	1,493,794		
Alabama Arizona Arkansas California Colorado Connecticut Delaware District of Columbia Florida Ceorgia Idaho Illinois Indiana Iova Kansas Kentucky Louisiana Mäine Maryland Massachusetts	14,514 3,625 11,626 98,068 11,739 24,213 4,119 14,375 17,924 24,119 3,463 85,460 40,176 27,286 24,238 20,316 16,300 9,074 20,193 63,248 85,682	Nebraska Nevada New Hampshire New Jersey Hew Mexico New York Horth Carolina North Dakota Ohio Oklahoma Oregon Pennsylvania Phode Island South Carolina South Dakota Tennessee Texas Utah Vermont Virginia Vashington	16,393 1,328 6,597 56,438 3,716 175,763 29,191 5,263 101,213 28,914 10,123 121,425 10,749 14,591 4,849 19,880 80,447 4,704 3,774 22,180 16,633
Michigan Minnesota Mississippi Missouri Montana	30,629 10,628 45,773 6,056	West Virginia Visconsin Vyoming	15,326 28,308 2,945

Source: Compiled by R. L. Polk and Company, and obtained from the Automotive Division of the Dureau of Foreign and Domestic Commerce.

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TABLE XX

REGISTRATION OF NEW COMMERCIAL CARS, BY STATES, 1933

State	Number of Registrations	State	Number of Registrations
U. S. Total	245,869		
Alabama Arizona	4,054 1,086	Nebraska Nevada	2,713
Arkansas	3,638	Nevada Nev Hampshire	233 1 , 783
California	13,788	New Jersey	7,401
Colorado	2,488	New Mexico	1,395
Connecticut	4,246	New York	20,200
Delaware	828	North Carolina	6,597
District of Columbia	1,362	North Dakota	1,107
Florida	4,186	Ohio	11,150
Georgia	5,260	Ol:lahoma	4,941
Idaho	1,545	Oregon	2,458
Illinois	11,764	Pennsylvania	19,991
Indiana	6,121	Rhode Island	1,598
Iova Kansas	5,449	South Carolina	2,604
Kansas Kentucky	4,292 4,195	South Dakota Tennessee	996 3 , 623
Louisiana	2 , 882	Temessee	13,889
laine	2,614	Utah	1,568
Maryland	3,818	Vermont	1,311
Massachusetts	9,511	Virginia	5,667
dichigan	9,085	Washington	4,002
Minnesota	5,722	West Virginia	2,988
lississippi	2,752	Tisconsin	5,411
Missouri	8 , 535	Wyoming	937
Montana	2,055		

Source: Compiled by R. L. Polk and Company, and obtained from the Automotive Division of the Bureau of Foreign and Domestic Commerce.

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Chapter V

GENERAL INFORMATION

General

The foregoing data express quantitatively the mechanism of the Industry. It has been shown how the Industry gathers together at centralized points raw, semi-processed, and fully-processed materials; converts them into completed units; and markets the finished product throughout the nation and in foreign countries. It has also been indicated how great is the concentrated power of a few management groups in the Industry.

Particular manifestations of this power are found in the attitude of the manufacturer toward the dealer, in which there is to be found evidence of considerable monchalance as to the latter's welfare. This power is also easily discerned in the relationship between the manufacturer and his suppliers, where it has resulted in competition of the most ruthless sort among such suppliers.

Trade Association

A peculiar feature of the Industry is the singularity of its "trade association" activities. There is but one association of importance in the Industry—the Automobile Manufacturers Association—to which all important members of the Industry, with the exception of the Ford Motor Company, belong. It is an outgrowth of the Association of Licensed Automobile Manufacturers, formed in 1903 to regulate the use of the Selden patents. When that Association's influence was lessened in 1911 by court decision regarding the validity of these patents, there developed from its membership the National Automobile Chamber of Commerce. This name was changed early in 1935 to the Automobile Manufacturers Association. It is one of the strongest trade associations in the country and one with whose activities the public is very familiar through its sponsorship of matters of direct public interest.

Labor Organizations

The relationship between labor and management in the Industry has been influenced by the facts that until very recent years there has been a constantly and rapidly increasing gain in the number of workers required, and that the wage scale of the Industry has been high. Furthermore, the physical conditions of plants have been such as to contribute to the comfort of workers to a greater degree than those which characterized many other industries. As a result, labor trouble in the Industry has been rare until recent years, when terrific demands have been put upon the worker as a result of the keen competition between manufacturers. Fortified by Section 7 (a) of the National Industrial Recovery Act, different labor unions have, since its passage, been active in organization work. Their efforts represent the only large scale agressive action along such lines since 1912, the earlier action having been unsuccessful. At present the three labor organizations of greatest influence in the Industry are: the American Federation of Labor, the Associated Automobile Workers of America, and the Mechanics! Educational Society of America. Of these, the American Federation of Labor claims to have the greatest membership in the Industry.







